

Claim Amendments

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1 and 2. (Canceled)

Claim 3. (Previously Presented) A polyurethane (A) prepared from reactants consisting essentially of:

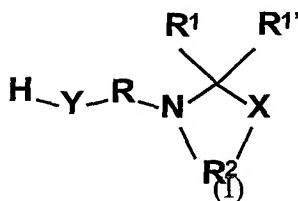
- a) at least one (cyclo)aliphatic organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group selected from the group consisting of monoesters of α,β -unsaturated carboxylic acids, vinyl ethers with diols or polyols having 2 to 20 carbon atoms, esters or amides of (meth)acrylic acid with aminoalcohols, unsaturated polyetherols or polyesterols or polyacrylate polyols having an average OH functionality ranging from 2 to 10,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) optionally, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group.

Claim 4. (Previously Presented) The polyurethane (A) according to claim 19, wherein component c) has a molecular weight below 750 g/mol.

Claim 5. (Previously Presented) The polyurethane according to claim 19, comprising per 100 g of compound at least 0.01 mol of unsaturated free radically or cationically polymerizable groups and/or at least 0.01 mol of capped amino groups.

Claim 6. (Previously Presented) The polyurethane according to claim 19, wherein the amino group of said at least one capped amino group is selected from the group consisting of open-chain amins, cyclic amins, ketimines, aldimines, N,O-acetals, N,O-ketals, carboxamides, sulfonamides, and amidines.

Claim 7. (Previously Presented) The polyurethane according to claim 19, wherein component c) has the formula (I)



where

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical comprising 2 to 20 carbon atoms which is unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

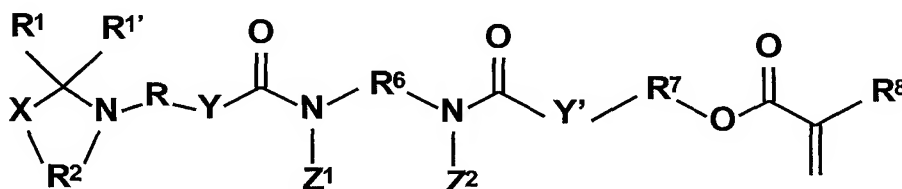
R^1 and $R^{1'}$ independently are each hydrogen, C_1 - C_{18} alkyl, C_2 - C_{18} alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or is C_6 - C_{12} aryl, C_5 - C_{12} cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, and each of said radicals optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen ($-N(R^4)-$) or $>N-NR^4R^5$;

Y is oxygen (-O-), unsubstituted nitrogen ($-N(H)-$) or sulfur (-S-); and

R^4 and R^5 independently are each hydrogen or C_1 - C_4 alkyl.

Claim 8. (Previously Presented) The polyurethane according to claim 19, comprising at least one of the following compounds of formula (II)



wherein

R and R^2 independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

R^1 and $R^{1'}$ independently are each hydrogen, C_1 - C_{18} -alkyl, C_2 - C_{18} -alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or are each C_6 - C_{12} -aryl, C_5 - C_{12} -cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, and

each of said radicals optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵;

Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur;

Y' is the same as or different from Y;

R⁶ and R⁷ each independently are a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

R⁸ is hydrogen, methyl, ethyl or hydroxymethyl, and

Z¹ and Z² are identical or different and independently of one another are hydrogen or -(CO)-NH-R⁶-NCO.

Claim 9. (Previously Presented) A polyurethane dispersion, comprising:

(A) a polyurethane according to claim 19 and comprising component d),

(C) optionally, one or more photochemically and/or thermally activatable initiators,

and

(D) optionally, further coatings additives.

Claim 10. (Previously Presented) A coating composition, comprising:

said polyurethane dispersion according to claim 9, and

(C) optionally, one or more photochemically and/or thermally activatable initiators, and

(D) optionally, further coatings additives.

Claim 11. (Previously Presented) A method of coating a substrate, which comprises:
radiation curing a substrate coated with said polyurethane as claimed in claim 19, and
heating the applied polyurethane at a temperatures up to 160° C.

Claim 12. (Previously Presented) The method according to claim 11, wherein said
temperature ranges from 60 to 160° C.

Claim 13. (Previously Presented) The method according to claim 11, wherein the
radiation curing is conducted under inert gas.

Claim 14. (Previously Presented) A radiation-curable coating composition comprising
said polyurethane according to claim 19.

Claim 15. (Previously Presented) A method for coating wood, metal or plastic, said
method, comprising:

coating said wood, metal or plastic with said polyurethane according to claim 19.

Claim 16. (Previously Presented) An automotive paint or automotive topcoat material
comprising said polyurethane as claimed in claim 19.

Claim 17. (Previously Presented) A coating composition, comprising:

said polyurethane (A) according to claim 19 and

(C) optionally, one or more photochemically and/or thermally activatable
initiators, and

(D) optionally, further, additives.

Claim 18. (Previously Presented) A method for coating wood, metal or plastic, said method, comprising:

coating said wood, metal or plastic with said polyurethane dispersion according to claim 9.

Claim 19. (Previously Presented) A polyurethane (A) prepared from reactants consisting essentially of:

- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) optionally, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) optionally, at least one diol compound which is a hydrocarbon diol having from 2 to 20 carbon atoms, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group, the allophanate fraction being 5 to 65 mol % based on the lowest molecular weight allophanate molecule.

Claim 20. (Previously Presented) A polyurethane (A) prepared from reactants consisting essentially of:

- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) 1-30 mol % of at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) optionally, at least one compound comprising at least two isocyanate-reactive groups which is a hydrocarbon diol having from 2 to 20 carbon atoms, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group.

Claim 21. (Currently Amended) The polyurethane according to claim 19, wherein component (e) is a diol selected from the group consisting of ethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,1-dimethylethane-1,2-diol, 1,6-hexanediol, 1,10-decanediol, bis-(4-hydroxycyclohexane)isopropylidene, tetramethylcyclobutanediol, 1,2-, 1,3- or 1,4-cyclohexanediol, cyclooctanediol, norbornanediol, pinanediol, decalindiol, bisphenol A, diethylene glycol, triethylene glycol, dipropylene glycol, tripropylene glycol, neopentyl glycol, ~~pentaerythritol~~[[,]] 1,2- and 1,4-butanediol, 1,5-pentanediol, 2-methyl-1,5-pentanediol, 2-ethyl-1,4-butanediol, 1,2-, 1,3- ~~and or~~ 1,4-dimethylolcyclohexane[[,]]; or is selected from the group consisting of glycerol, trimethylolethane, trimethylolpropane, trimethylolbutane, dipentaerythritol, ditrimethylolpropane, butanetriol, erythritol, pentaerythritol, sorbitol, 2-aminoethanol, 3-amino-1-propanol, 1-amino-2-propanol ~~or~~ and 2-

(2-aminoethoxy)ethanol, ~~bisphenol A and butanetriol.~~

Claim 22. (Currently Amended) The polyurethane according to claim 20, wherein component (e) is a diol selected from the group consisting of ethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,1-dimethylethane-1,2-diol, 1,6-hexanediol, 1,10-decanediol, bis-(4-hydroxycyclohexane)isopropylidene, tetramethylcyclobutanediol, 1,2-, 1,3- or 1,4-cyclohexanediol, cyclooctanediol, norbornanediol, pinanediol, decalindiol, diethylene glycol, triethylene glycol, dipropylene glycol, tripropylene glycol, neopentyl glycol, bisphenol A, ~~pentaerythritol~~[[,]] 1,2- and 1,4-butanediol, 1,5-pentanediol, 2-methyl-1,5-pentanediol, 2-ethyl-1,4-butanediol, 1,2-, 1,3- ~~and or~~ 1,4-dimethylolcyclohexane[[,]]; or is selected from the group consisting of glycerol, trimethylolethane, trimethylolpropane, trimethylolbutane, butanetriol, pentaerythritol, dipentaerythritol, ditrimethylolpropane, erythritol, sorbitol, 2-aminoethanol, 3-amino-1-propanol, 1-amino-2-propanol ~~or~~ and 2-(2-aminoethoxy)ethanol, ~~bisphenol A and butanetriol.~~